

Mechanical Systems

Current Issues of the day for Mechanical Systems and Designers



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*2005 National Workshop on
State Building Energy Codes
Austin, Texas*



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MEP Systems Make up a Significant Portion of Building Costs

- 35% to 50% of energy use in building
- 1/3 of construction costs
- Directly related to occupant comfort (read: productivity!)
- Impacts building durability
- With effort, can cut energy costs in half by conscientious design.



Cut Energy Costs by 50% !?!?!?

- Compared to what? Energy code minimum.
- High performance lighting and high efficiency HVAC equipment can cut costs 15% to 20%
- Put shades on those correctly oriented windows
- Use good glass
- Daylight alone can save 30%
- Use Energy Star equipment
- Reduce plug loads
- Perform thermostat management
- All these things are tried, proven and available
- Haven't even started on innovative HVAC advances
- Or solar...



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Following Basic Energy Code Requirements leads to “Good” Systems

- Size HVAC system *correctly*
- Apply the correct insulation levels
- Fenestration requirements
- Air sealing
- Equipment efficiencies
- Economizers
- Service water heating
- Workmanship



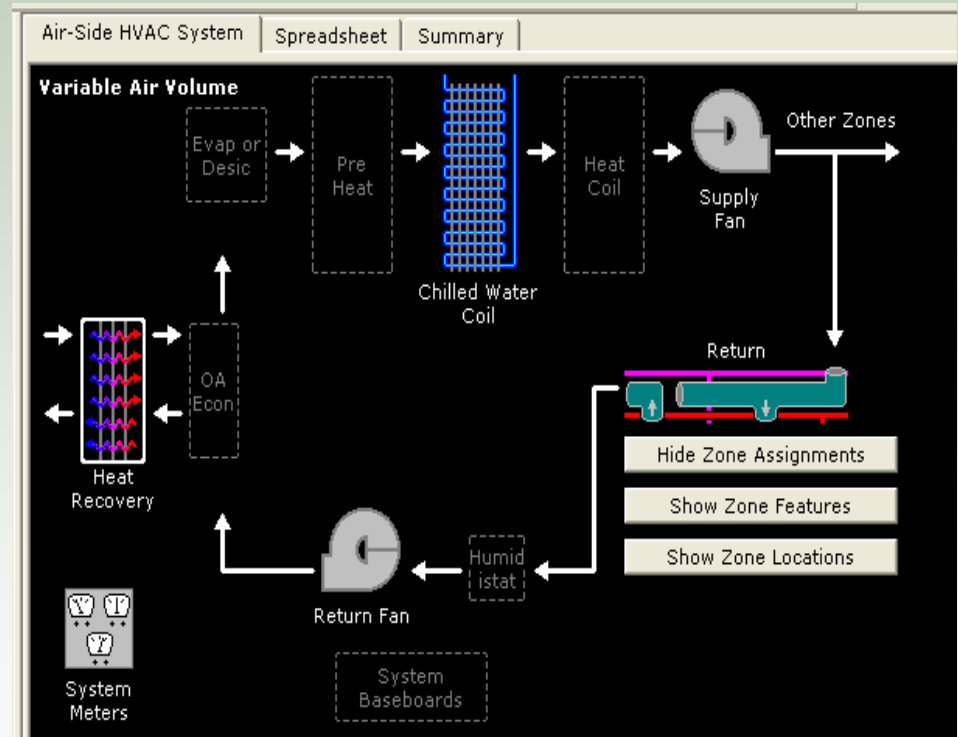
Going “Beyond” the Code

- Dedicated Outdoor Air Systems (DOAS)
- Demand Control
- Under Floor Air Distribution (UFAD)
- Geothermal Systems
- Energy and Heat Recovery
- Variable Speed Drives
- High SEER Ratings
- Commissioning
- Displacement Systems
- Natural Ventilation



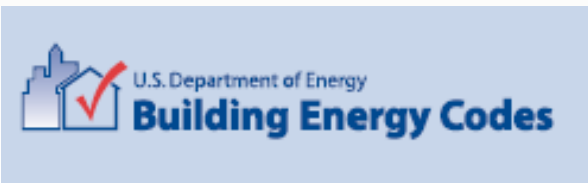
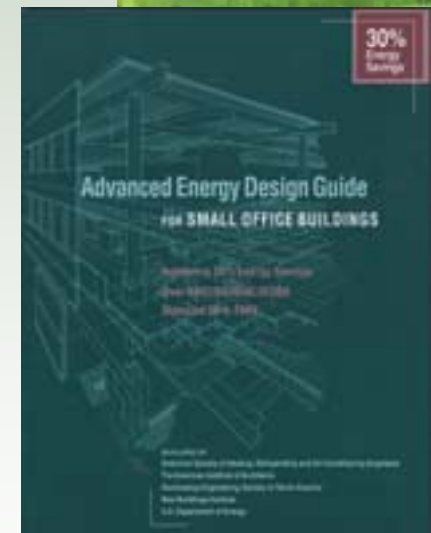
Energy Modeling

- An important tool - should be in every engineer's toolbox!
- Solid data for economic decisions - eliminates guessing
- Use for energy code compliance
- Use for Building Rating System (LEED™) analysis



Resources

- ASHRAE GreenGuide
- ASHRAE Advanced Energy Design Guide (30% over code)
- US Department of Energy
- Buildingscience.com
- United States Green Building Council (LEED™)



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